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SUPERNUMERARY LEG IN A MALE FROG (*Rana palustris*). By FREDERICK TUCKERMAN, M.D., Amherst, Massachusetts. (PLATE XVI.)

I FIRST wish to thank Professor Warner of the Massachusetts Agricultural College, to whom the frog belongs, for his kindness in placing it at my disposal.

The remarkable abnormality about to be described occurred in a frog which was blown, while blasting with gunpowder, out of a crevice in a ledge of mica schist 12 feet below the surface. It was immediately picked up, and, apart from being stunned, had apparently sustained no injury.

The same explosion also brought to the surface five other frogs, of different ages and sizes, none of which were killed or injured.

At the time of its unexpected appearance the frog was supposed to be about a month old. From this time until it was killed, two months later, it was not observed to eat anything.

The external opening of the crevice in the ledge measured only a few lines at its widest point, and flowing into it was a small stream of water, which undoubtedly conveyed either the eggs or the frogs in the larval stage to the interior of the rock, as the breach in the ledge was much too small even to admit the passage of a very young frog.

The pigmentation of the skin covering the extra limb corresponded in form and colour with that of the rest of the body, with the exception that the dark brown bands or spots towards the distal end of the leg completely encircled it. It was attached to the trunk slightly to the left of the mesial line, and to the left of the posterior end of the tip of the urostyle, just above the opening of the cloaca. The first part, about a line in length, seemed to be chiefly tegumentary in character, and was quite narrow. This was followed by an enlargement 2½ lines in length, and a little less in width, chiefly in a ventral direction. Then came a second constriction greater than the first, which immediately widened into a large oval-shaped dilatation or sac, ¾ of an inch in length and ⅜ of an inch in width, the walls of which were not at all tense, and offered less resistance to pressure than was the case in the first enlargement. The space within was partially filled with fluid. It was quite evident, however, that it contained something else beside fluid, for, when rested upon one end, it not only kept its oval form perfectly, but could not be ~~possibly~~ depressed in the direction of its long axis. The forcib remainder of the limb to the distal tarsals was straight, and measured ½ an inch in length and ⅛ of an inch in width. It was jointed above and below. The superior articulation admitted of but slight movement, the inferior was quite movable. There were two digits present, the inner one the longer, and a rudiment of a third. The usual position of the toes was that of adduction.

The limb measured, from the point of its attachment to the trunk to the tip of the last phalanx of the inner digit, 2¼ inches.

The circulation of the blood in the web between the two digits, as seen with the aid of the microscope, presented nothing unusual in appearance.

When stimulation was applied to the distal end of the limb, or to any part of it, the frog would usually draw itself, or jump quickly away, dragging the extra limb after it. Sometimes, however, often-repeated stimulation would call forth a slight muscular contraction in the limb itself, and this was occasionally seen to take place when the animal was left entirely to itself. The distal end of the limb would then be abducted a little to the right, the toes would partially separate, and at the same time a slight drawing of the whole limb toward the trunk would be perceptible.

The following appearances were observed on opening the limb:—

The narrow portion close to the point of attachment to the trunk contained a few tendons, blood-vessels, and a nerve. The tendons took their origin from the symphysis pubis. The blood-vessels could not be made out with any degree of certainty, with the single exception of a vein which appeared to join the left pelvic vein. The nerve was apparently a division or branch of the sciatic. In tracing it down the limb no division of it above the knee could be discovered, nor were any lateral branches made out. The space in the first enlargement was almost completely filled by a mass of muscle to which the tendons belonged, and in which the vessels ramified. Neither bone (*femur*) nor cartilage were present at this point. The second constricted portion, smaller and narrower than the first, contained the tendons, vessels, and nerve, which it conveyed to the parts beyond. Within the large oval-shaped sac was a bundle of muscles running the entire length of it. There were no adhesions uniting the skin to the subjacent parts except at the ends. Two-thirds of the space not occupied by muscles was filled with a yellowish-red fluid, having a slightly acid reaction, and quite rich in red and colourless blood-corpuscles. The muscles were somewhat smaller than usual, and a few were wanting; but otherwise they presented no special variations from those found in this region. The gastrocnemius, tibialis posticus, peroneus, and tibialis anticus were easily distinguished. On cutting away the muscles a bone (*crus*) was brought into view. The shaft was long, cylindrical, and very slender. No groove was detected indicating the line of union between the fibula and tibia. The articular expansion at the inferior extremity was very large and out of proportion to the shaft above it. This formed a movable joint with the articular process of the bone below it. At the superior end of the shaft was an articular process, quite small, which had only a tendinous connection with the region above it. In the proximal tarsal region the skin adhered quite firmly to the parts below it. The muscles were much atrophied, and the vessels and nerves could not be clearly followed. In place of the usual two elongated bones (*astragalus* and *calcaneum*), connected above and below by epiphyses, there was a single long bone, unmarked by any longitudinal groove, articulating slightly with the ankylosed (?) tibia and fibula.

At the distal end of the bone no extra ossicles were found. The right digit was composed of a metatarsal bone and two phalanges. The inner digit (would be the fourth counting from the *hallux*), the longer, consisted of a metatarsal bone and three phalanges. The rudiment corresponded to the middle digit.

From this description it will be seen that the foot belonged to the right side of the body, although the limb sprang from the left side.

With the exception of the accessory limb the frog appeared to be in a perfectly normal condition.

EXPLANATION OF PLATE XVI.

It was found necessary, in order to show the rudimentary digit well, to turn the pes over, thus bringing the dorsal surface into view.

1. Enlargement filled with muscles corresponding to the position of the femur. 2. Sac partly filled with fluid containing muscles and crus. 3. Proximal tarsal region composed of a single long bone. 4. Rudiment of the middle digit.

[*Editorial Note.*—The malformation in this very remarkable frog will, without doubt, recall to some of our readers the case of Jean Battista dos Santos, a native of Portugal, who visited this country in 1865, being then in his nineteenth year, and whose case was described in the *Lancet* of July 29, and subsequently by the late Dr P. D. Handyside, in the *Edinburgh Medical Journal*, March 1866. In Dos Santos's case of imperfect double monstrosity there were two complete sets of external organs of generation in addition to the intermediate lower limb. A case of a somewhat similar kind, in a female fœtus, but with two lower limbs, was described by Von Baer, in *Mem. de l'Acad. de St. Petersb.* VI. Series, and his figures are reproduced in Förster's *Missbildungen des Menschen*, Jena, 1865. The writer of this note had also the opportunity of seeing, in February 1885, through the courtesy of Mr R. Urquhart, Lecturer on Pharmacy, Edinburgh, a new-born child with a similar deformity. The child lived a few days, but no dissection of it was permitted by the parents.—*W. T.*]

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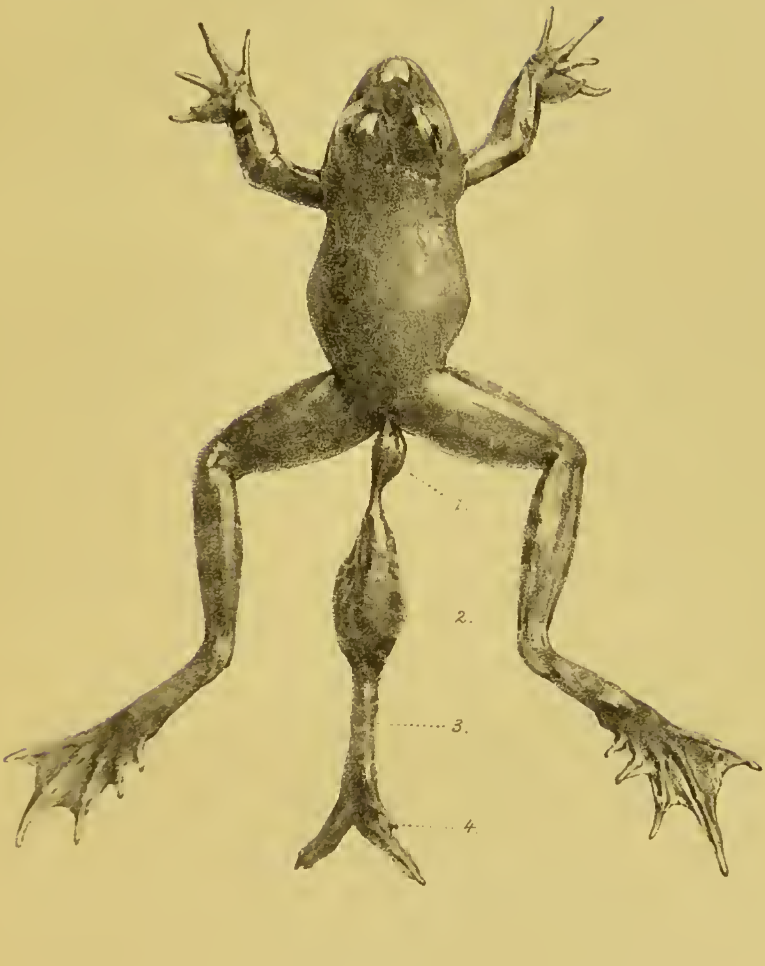

MALFORMED FROG.

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